
Utilizing Expert Knowledge in Estimating Future STS Costs

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A method of estimating the costs of future space transportation systems (STSs) involves classical activity-based cost (ABC) modeling combined with systematic utilization of the knowledge and opinions of experts to extend the process-flow knowledge of existing systems to systems that involve new materials and/or new architectures. The expert knowledge is particularly helpful in filling gaps that arise in computational models of processes because of inconsistencies in historical cost data. Heretofore, the costs of planned STSs have been estimated following a "top-down" approach that tends

to force the architectures of new systems to incorporate process flows like those of the space shuttles. In this ABC-based method, one makes assumptions about the processes, but otherwise follows a "bottoms up" approach that does not force the new system architecture to incorporate a space-shuttle-like process flow. Prototype software has been developed to implement this method. Through further development of software, it should be possible to extend the method beyond the space program to almost any setting in which there is a need to estimate the costs of a new system and

to extend the applicable knowledge base in order to make the estimate.

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